at1121exam_practice EXAMPLE! DO NOT HAND IN FOR CREDIT (v15)

- If you are looking for a practice exam that you can hand in for credit:

https://chadworley.github.io/algtwo2026/u04/1121/at1121exam/at1121exam.html

Question 1

Simplify the radical expressions.

$\sqrt{18}$ $\sqrt{44}$ $\sqrt{28}$

$\sqrt{3 \cdot 3 \cdot 2}$ $\sqrt{2 \cdot 2 \cdot 11}$ $\sqrt{2 \cdot 2 \cdot 7}$

$3\sqrt{2}$ $2\sqrt{11}$ $2\sqrt{7}$

Question 2

Find all solutions to the equation below:

$$3\left((x-8)^2-5\right) = 93$$

First, divide both sides by 3.

$$(x-8)^2-5=31$$

Then, add 5 to both sides.

$$(x-8)^2=36$$

Undo the squaring. Remember the plus-minus symbol.

$$x-8=\pm 6$$

Add 8 to both sides.

$$x=8\pm 6$$

So the two solutions are $x=14$ and $x=2$.

Question 3

By completing the square, find both solutions to the given equation. *You must show work for full credit!*

$$x^2 + 16x = 80$$

Take the linear coefficient, 16, halve it and square the result. You should get 64. Add this to both sides of the equation to complete the square.

$$x^2 + 16x + 64 = 80 + 64$$

$$x^2 + 16x + 64 = 144$$

Factor the perfect-square trinomial.

$$(x + 8)^2 = 144$$

$$x + 8 = \pm 12$$

$$x = -8 \pm 12$$

$$x = 4 \quad \text{or} \quad x = -20$$

Question 4

A quadratic polynomial function is shown below in standard form.

$$y = 2x^2 + 28x + 95$$

Express the function in **vertex form** and identify the **location** of the vertex.

From the first two terms, factor out 2 .

$$y = 2(x^2 + 14x) + 95$$

We want a perfect square. Halve 14 and square the result to get 49 . Add and subtract that value inside the parentheses.

$$y = 2(x^2 + 14x + 49 - 49) + 95$$

Factor the perfect-square trinomial.

$$y = 2((x + 7)^2 - 49) + 95$$

Distribute the 2.

$$y = 2(x + 7)^2 - 98 + 95$$

Combine the constants to get **vertex form**:

$$y = 2(x + 7)^2 - 3$$

The vertex is at point $(-7, -3)$.